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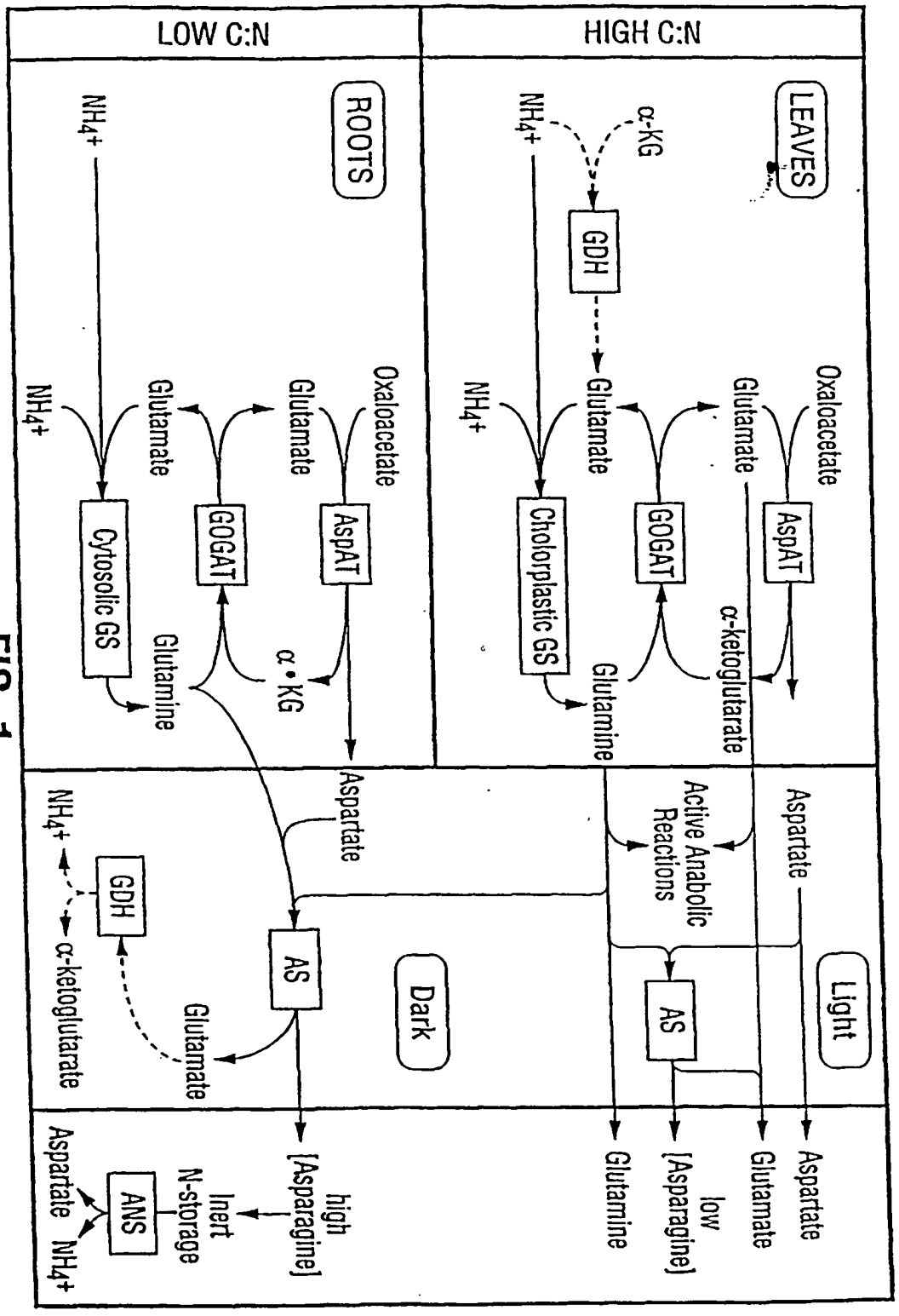

LOW C:N
HIGH C:N
ROOTS
LEAVES
NH4+
α-KG
GDH
Glutamate
Oxaloacetate
Glutamate
NH4+
Cytosolic GS
GOGAT
AspAT
Chloroplastic GS
GOGAT
AspAT
Glutamine
α • KG
α-ketoglutarate
Glutamine
Aspartate
Active Anabolic Reactions
Aspartate
NH4+
GDH
α-ketoglutarate
AS
AS
Dark
Light
Glutamate
Glutamine
low [Asparagine]
high [Asparagine]
Inert N-storage
ANS
Aspartate
NH4+

FIG. 1

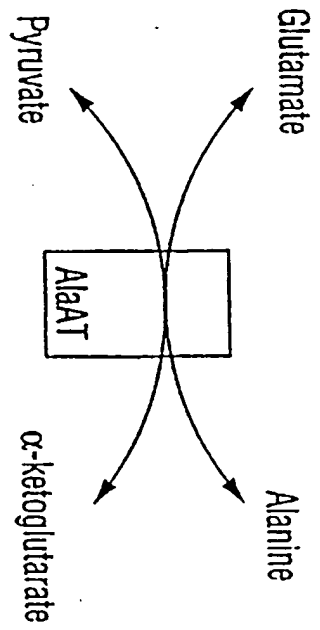


FIG. 2

GTCGACCTGCAGGTCAACGGATCCTAATCGGGGTATATCCCGACCCGGAAAAAGAAACGTAGGACACGTG -250

ACAAAACTTCATATGATCCGAGTGAATCAAGCCAAAAGGGGGATTGACACAACAGCTCAGCTTTCGTTTT -180

CGGTCCAATCGCTGTTCCAACTTTACTTACAAGTCGTACACGTCTCTCTCTCTCTCTCTCTCTCTCACTC -110

ACTTCCTCTTATAAAGACTCTCTGATCAAACGTATAATCGGAAAACTCCATTCTTTGATACCATCGATAA -40

+1→

TACTAAGAGAGGTGATTGATTCTTTAATCACTGTTTGATATCCTTAACTTTGATCCATTTACTCTGTTCA 31

ATCATTTTTGTAGAG

FIG. 3

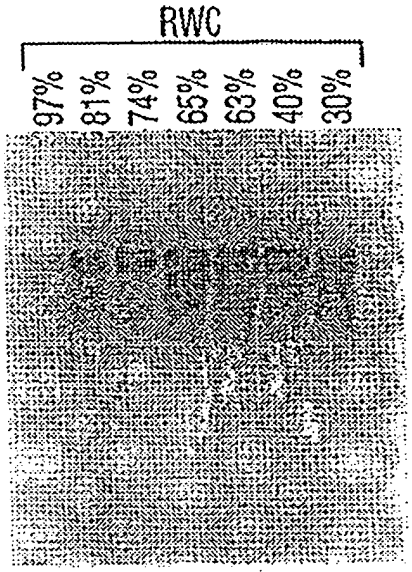


FIG. 4A

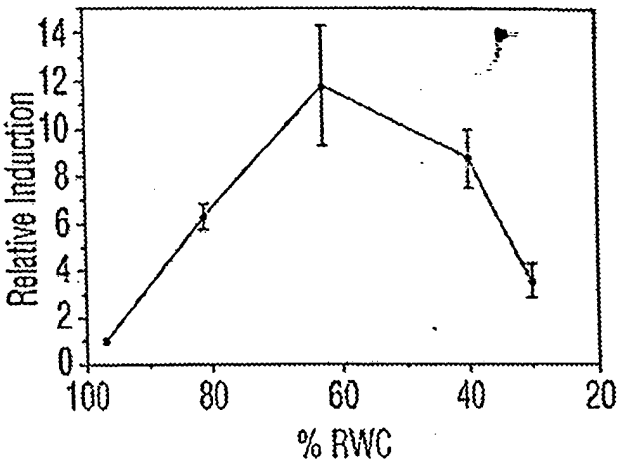


FIG. 4B

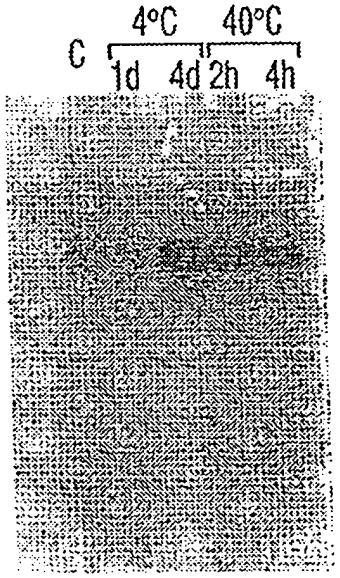


FIG. 4C

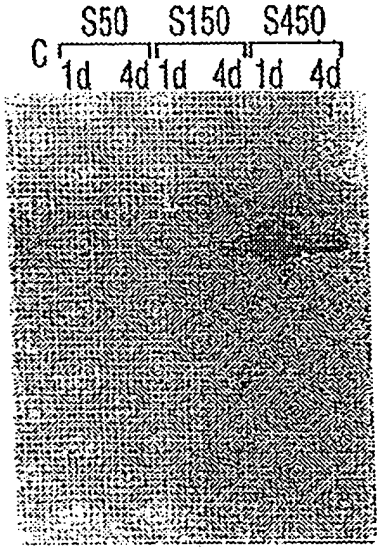


FIG. 4D

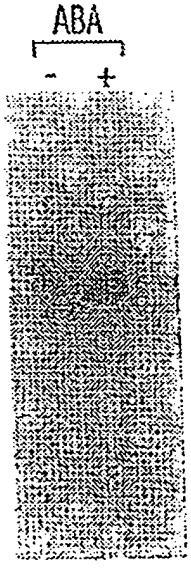


FIG. 4E

```
   GGCCACAAAACCGCGGAAAGAGATAGACGGACAGCTAGAGGCGTCGGAAGATACTCGCTGCTCTGCCGCCCCCTTCGTCTTAGTTGATCTCGCC      94

ATGGCTGCCACCGTCGCCGTGGACAACCTGAACCCCAAGGTTTTAAAATGTGAGTATGCTGTGCGTGGAGAGATTGTCATCCATGCTCAGCGCTTG     190
M  A  A  T  V  A  V  D  N  L  N  P  K  V  L  K  C  E  Y  A  V  R  G  E  I  V  I  H  A  Q  R  L      32

CAGGAACAGCTAAAGACTCAACCAGGGTCTCTACCTTTTGATGAGATCCTCTATTGTAACATTGGGAACCCACAATCTCTTGGTCAGCAACCAGTT     286
Q  E  Q  L  K  T  Q  P  G  S  L  P  F  D  E  I  L  Y  C  N  I  G  N  P  Q  S  L  G  Q  Q  P  V      64

ACATTCTTCAGGGAGGTTCTTGCCCTTTGTGATCATCCAGACCTGTTGCAAAGAGAGGAAATCAAAACATTGTTCAGTGCTGATTCTATTTCTCGA     382
T  F  F  R  E  V  L  A  L  C  D  H  P  D  L  L  Q  R  E  E  I  K  T  L  F  S  A  D  S  I  S  R      96

GCAAAGCAGATTCTTGCCATGATACCTGGAAGAGCAACAGGAGCATACAGCCATAGCCAGGGTATTAAAGGACTTCGTGATGCAATTGCTTCTGGG     478
A  K  Q  I  L  A  M  I  P  G  R  A  T  G  A  Y  S  H  S  Q  G  I  K  G  L  R  D  A  I  A  S  G     128

ATCGCTTCACGAGATGGATTCCCTGCTAATGCTGATGACATTTTTCTCACAGATGGAGCAAGTCCTGGGGTGCACCTGATGATGCAATTACTGATA     574
I  A  S  R  D  G  F  P  A  N  A  D  D  I  F  L  T  D  G  A  S  P  G  V  H  L  M  M  Q  L  L  I     160

AGGAATGAGAAAGATGGCATTCTTGTCCCGATTCCTCAGTACCCCTTGTACTCGGCTTCCATAGCTCTTCATGGCGGAGCTCTTGTCCCATACTAT     670
R  N  E  K  D  G  I  L  V  P  I  P  Q  Y  P  L  Y  S  A  S  I  A  L  H  G  G  A  L  V  P  Y  Y     192

CTCAATGAATCGACGGGCTGGGGTTTGGAAACCTCTGATGTTAAGAAGCAACTTGAAGATGCTCGGTCAAGAGGCATCAACGTTAGGGCTTTGGTG     766
L  N  E  S  T  G  W  G  L  E  T  S  D  V  K  K  Q  L  E  D  A  R  S  R  G  I  N  V  R  A  L  V     224

GTTATCAATCCAGGAAATCCAACTGGACAGGTACTTGCTGAAGAAAACCAATATGACATAGTGAAGTTCTGCAAAAATGAGGGTCTTGTTCTTCTA     862
V  I  N  P  G  N  P  T  G  Q  V  L  A  E  E  N  Q  Y  D  I  V  K  F  C  K  N  E  G  L  V  L  L     256

GCTGATGAGGTATACCAAGAGAACATCTATGTTGACAACAAGAAATTCCACTCTTTCAAGAAGATAGTGAGATCCTTGGGATACGGCGAGGAGGAT     958
A  D  E  V  Y  Q  E  N  I  Y  V  D  N  K  K  F  H  S  F  K  K  I  V  R  S  L  G  Y  G  E  E  D     288
```

FIG. 5

```
CTCCCTCTAGTATCATATCAATCTGTTTCTAAGGGATATTATGGTGAGTGTGGTAAAAGAGGTGGTTACTTTGAGATTACTGGCTTCAGTGCTCCA    1054
L  P  L  V  S  Y  Q  S  V  S  K  G  Y  Y  G  E  C  G  K  R  G  G  Y  F  E  I  T  G  F  S  A  P      320

GTAAGAGAGCAGATCTACAAAATAGCATCAGTGAACCTATGCTCCAATATCACTGGCCAGATCCTTGCTAGTCTTGTCATGAACCCACCAAAGGCT    1150
V  R  E  Q  I  Y  K  I  A  S  V  N  L  C  S  N  I  T  G  Q  I  L  A  S  L  V  M  N  P  P  K  A      352

AGTGATGAATCATACGCTTCATACAAGGCAGAAAAAGATGGAATCCTCGCATCTTTAGCTCGTCGTGCGAAGGCATTGGAGCATGCATTCAATAAA    1246
S  D  E  S  Y  A  S  Y  K  A  E  K  D  G  I  L  A  S  L  A  R  R  A  K  A  L  E  H  A  F  N  K      384

CTTGAGGGAATTACTTGCAACGAGGCTGAAGGAGCAATGTACGTGTTCCCTCAAATCTGTCTGCCACAGAAGGCAATTGAGGCTGCTAAAGCTGCT    1342
L  E  G  I  T  C  N  E  A  E  G  A  M  Y  V  F  P  Q  I  C  L  P  Q  K  A  I  E  A  A  K  A  A      416

AACAAAGCACCTGATGCATTCTATGCTCTTCGTCTCCTCGAGTCGACTGGAATCGTCGTTGTCCCTGGATCAGGATTTGGCCAGGTTCCTGGCACA    1438
N  K  A  P  D  A  F  Y  A  L  R  L  L  E  S  T  G  I  V  V  V  P  G  S  G  F  G  Q  V  P  G  T      448

TGGCACTTCAGGTGCACGATCCTTCCGCAGGAGGATAAGATCCCGGCAGTCATCTCCCGCTTCACGGTGTTCCATGAGGCGTTCATGTCAGAGTAT    1534
W  H  F  R  C  T  I  L  P  Q  E  D  K  I  P  A  V  I  S  R  F  T  V  F  H  E  A  F  M  S  E  Y      480

CGTGACTAAACTGGTGCAACATGTGGGATTACATACAACCCTCATGGGGTTTTCGTAGGCGTTCTTGGTTTTGCCCCCCCCCCCCTTCTCTCTCTC    1630
R  D                                                                                                  482

TCTCTCTCTGACAGCATCCTCCTCTAGATGAGACAAAATAAAGCAAAGCCATGTCATCCTTAAAAAAAAAA    1701
```

FIG.5 Cont'd

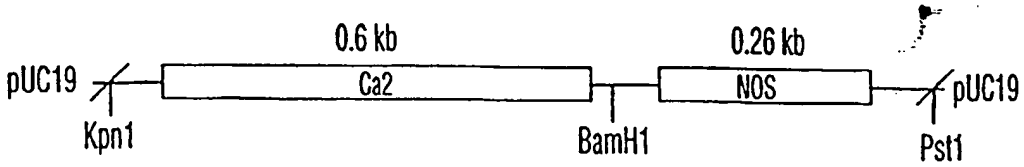


FIG. 6

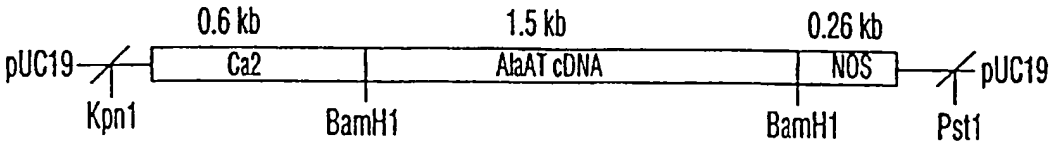


FIG. 7A

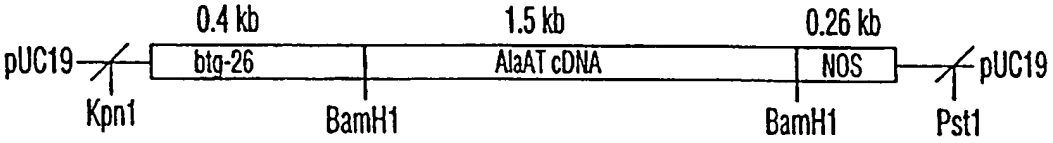


FIG. 7B

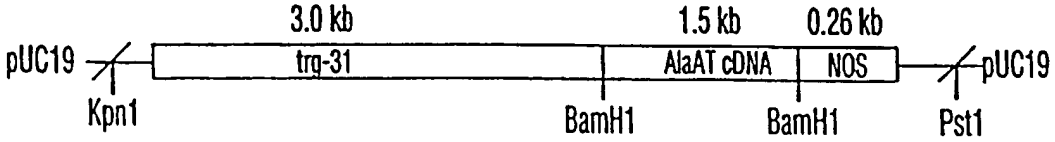


FIG. 7C

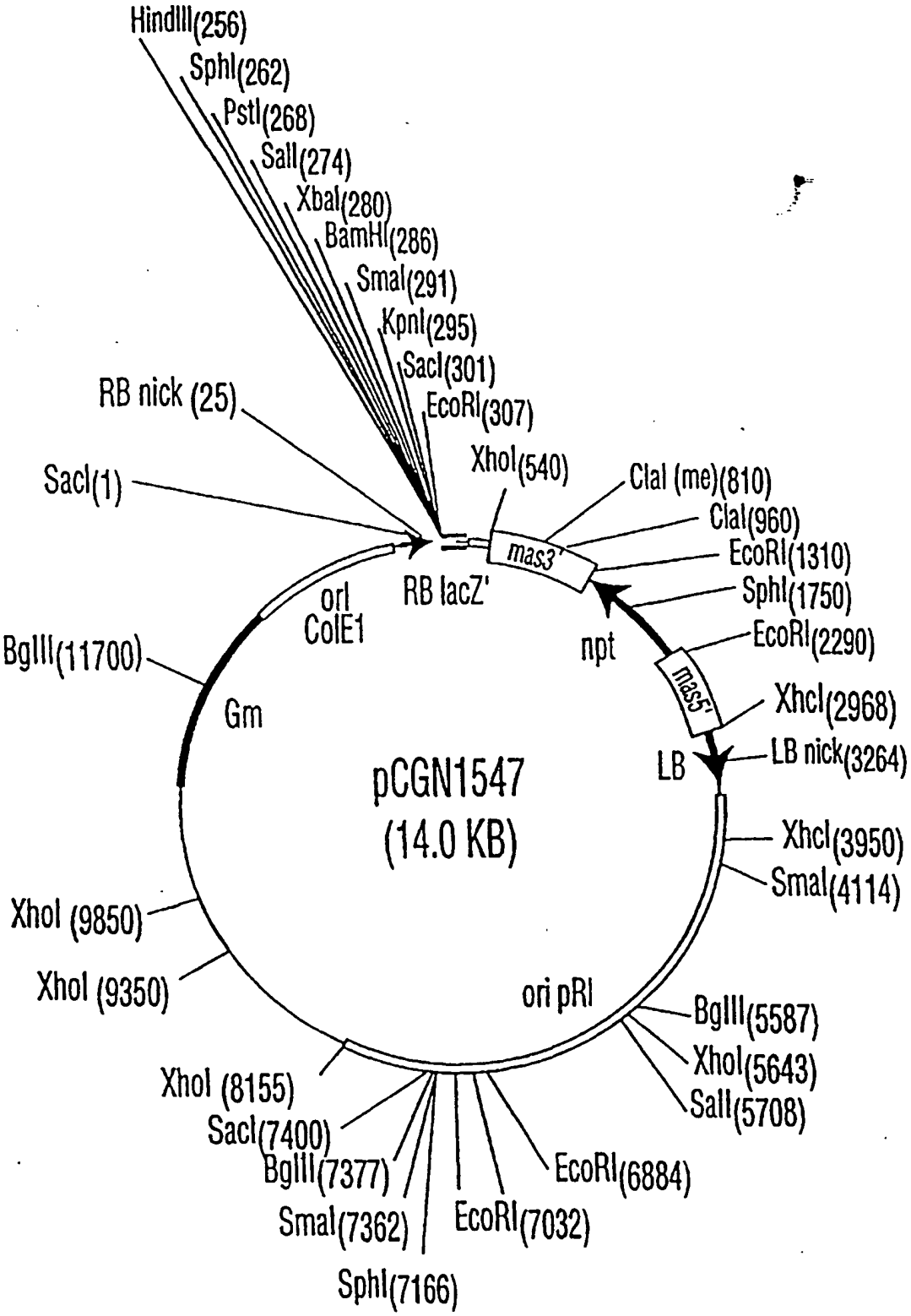

HindIII(256)
SphI(262)
PstI(268)
SalI(274)
XbaI(280)
BamHI(286)
SmaI(291)
KpnI(295)
SacI(301)
EcoRI(307)
RB nick (25)
SacI(1)
XhoI(540)
ClaI (me)(810)
ClaI(960)
EcoRI(1310)
SphI(1750)
EcoRI(2290)
XhcI(2968)
LB nick(3264)
XhcI(3950)
SmaI(4114)
BglII(5587)
XhoI(5643)
SalI(5708)
EcoRI(6884)
EcoRI(7032)
SphI(7166)
SmaI(7362)
BglII(7377)
SacI(7400)
XhoI (8155)
XhoI (9350)
XhoI (9850)
BglII(11700)
mas3'
RB lacZ'
ori
ColE1
Gm
npt
mas5'
LB
ori pRI
pCGN1547
(14.0 KB)

FIG. 8

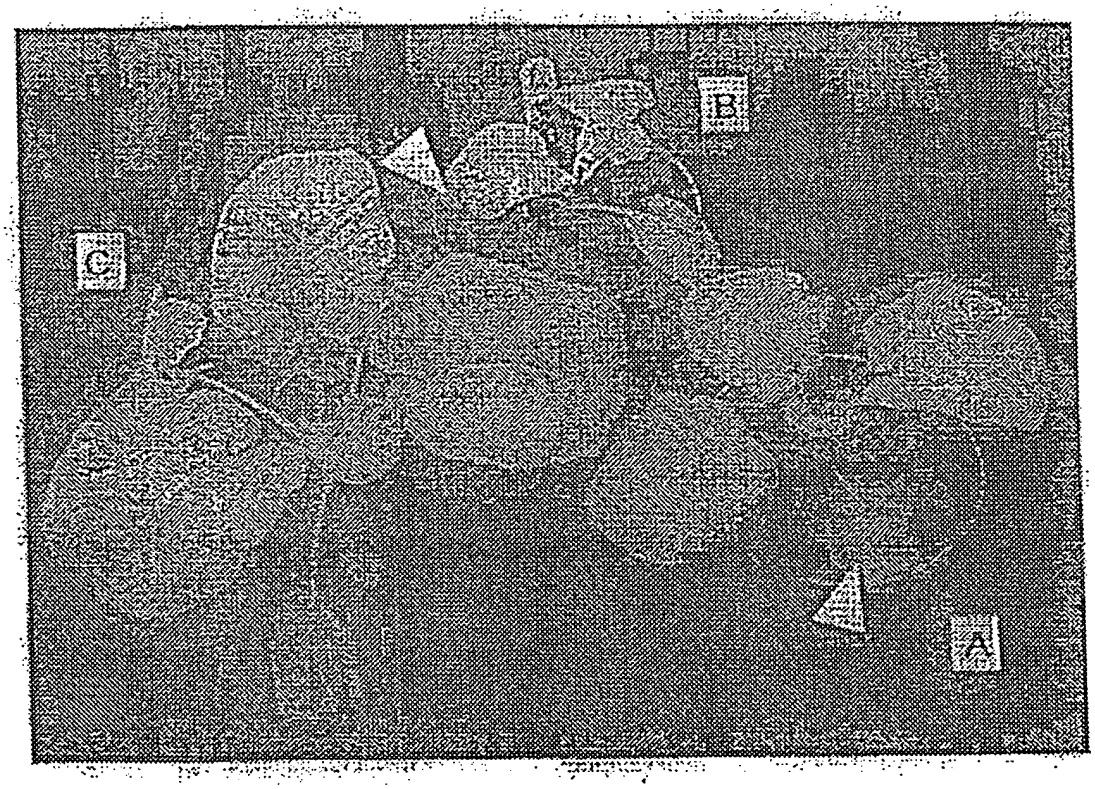


FIG. 9

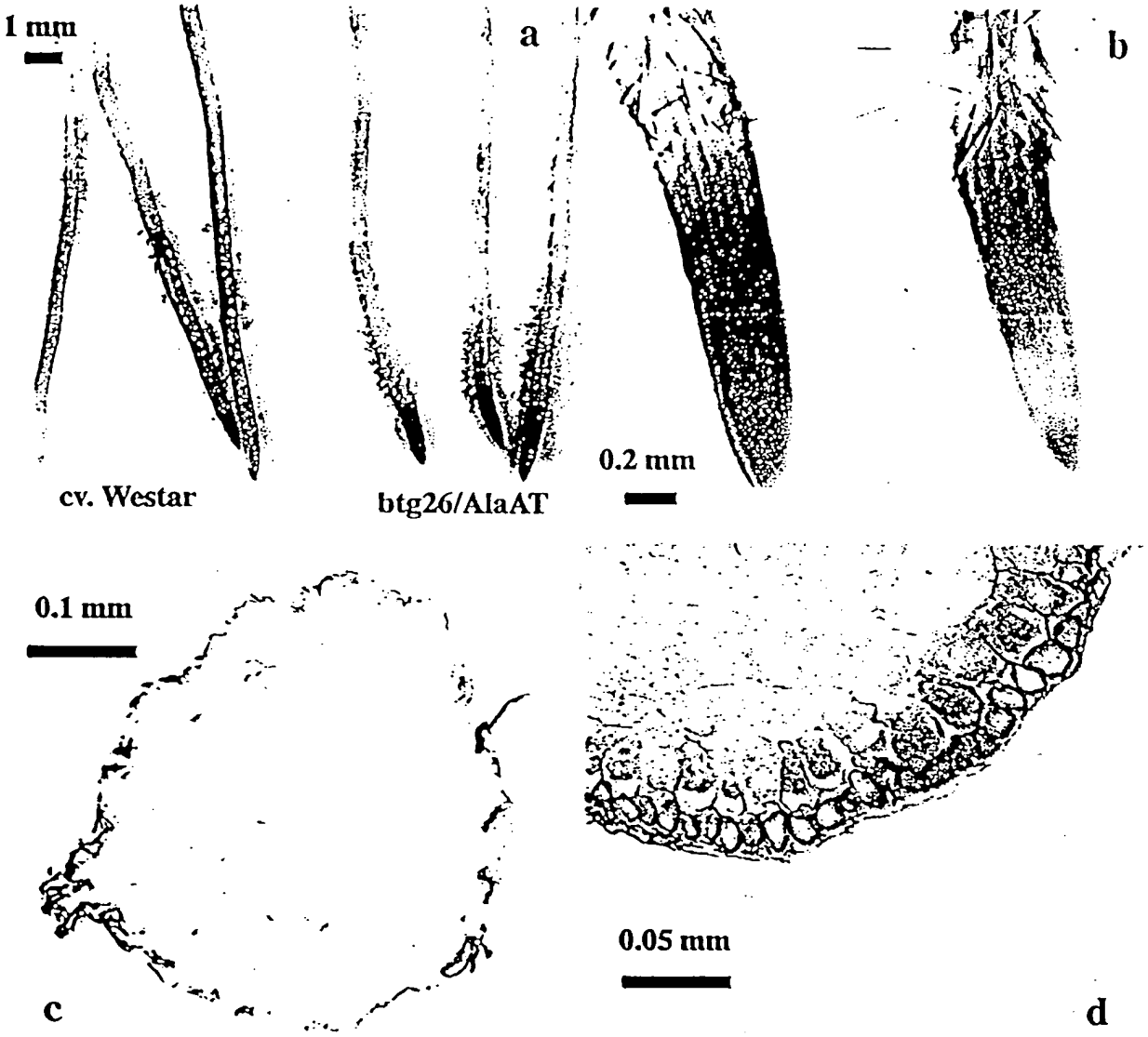
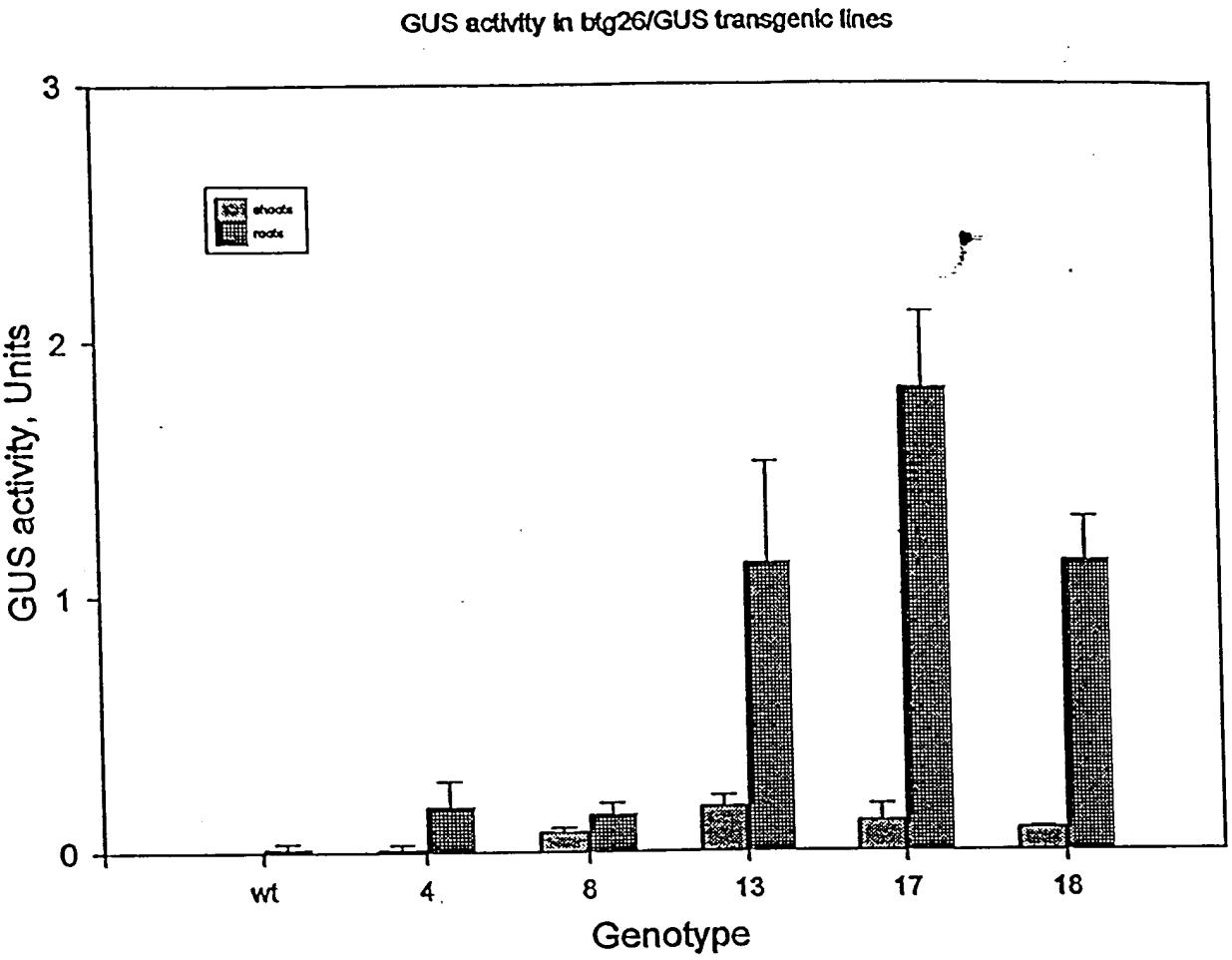


FIGURE 10



Root/shoot ratios:

btg26/GUS, line 4	-	19.5
btg26/GUS, line 8	-	1.9
btg26/GUS, line 13	-	6.5
btg26/GUS, line 17	-	15.7
btg26/GUS, line 18	-	13.2

FIGURE 11

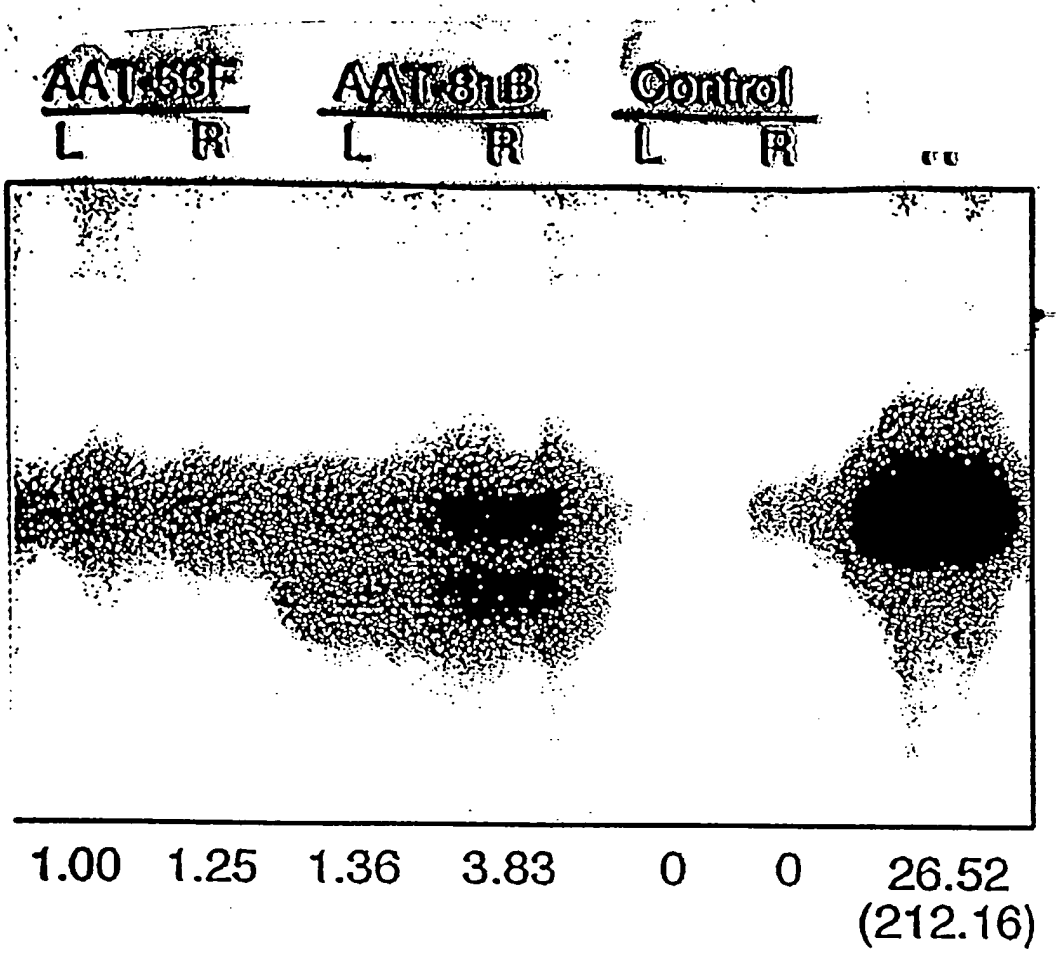


FIGURE 12

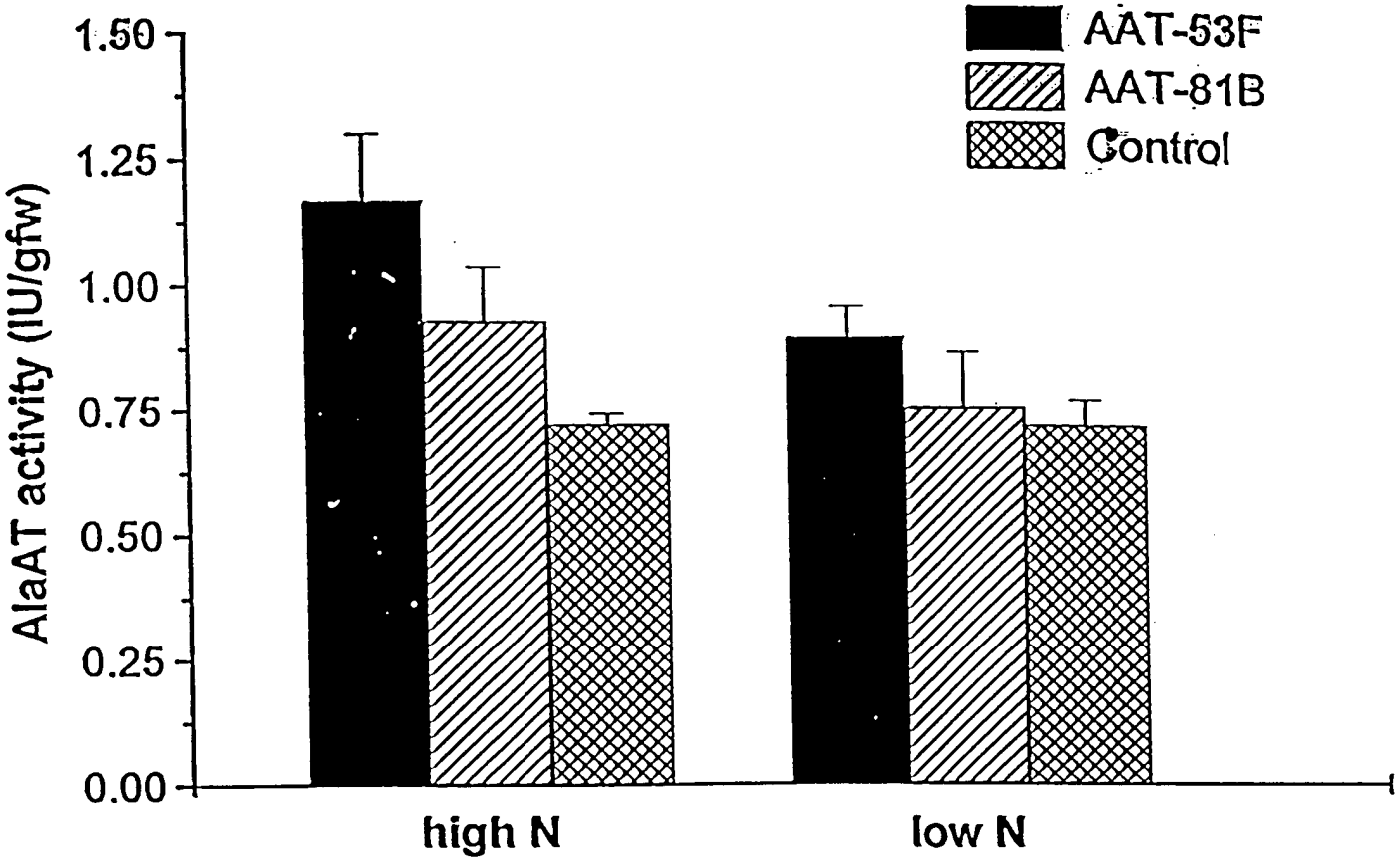

AAT-53F
AAT-81B
Control
AlaAT activity (IU/gfw)
1.50
1.25
1.00
0.75
0.50
0.25
0.00
high N
low N

FIGURE 13

AlaAT activity in shoots of wild type, cv. Westar, and transgenic, btg26/AlaAT line 81B, plants grown hydroponically on 0.6 mM nitrate after 36 hours of salt treatment

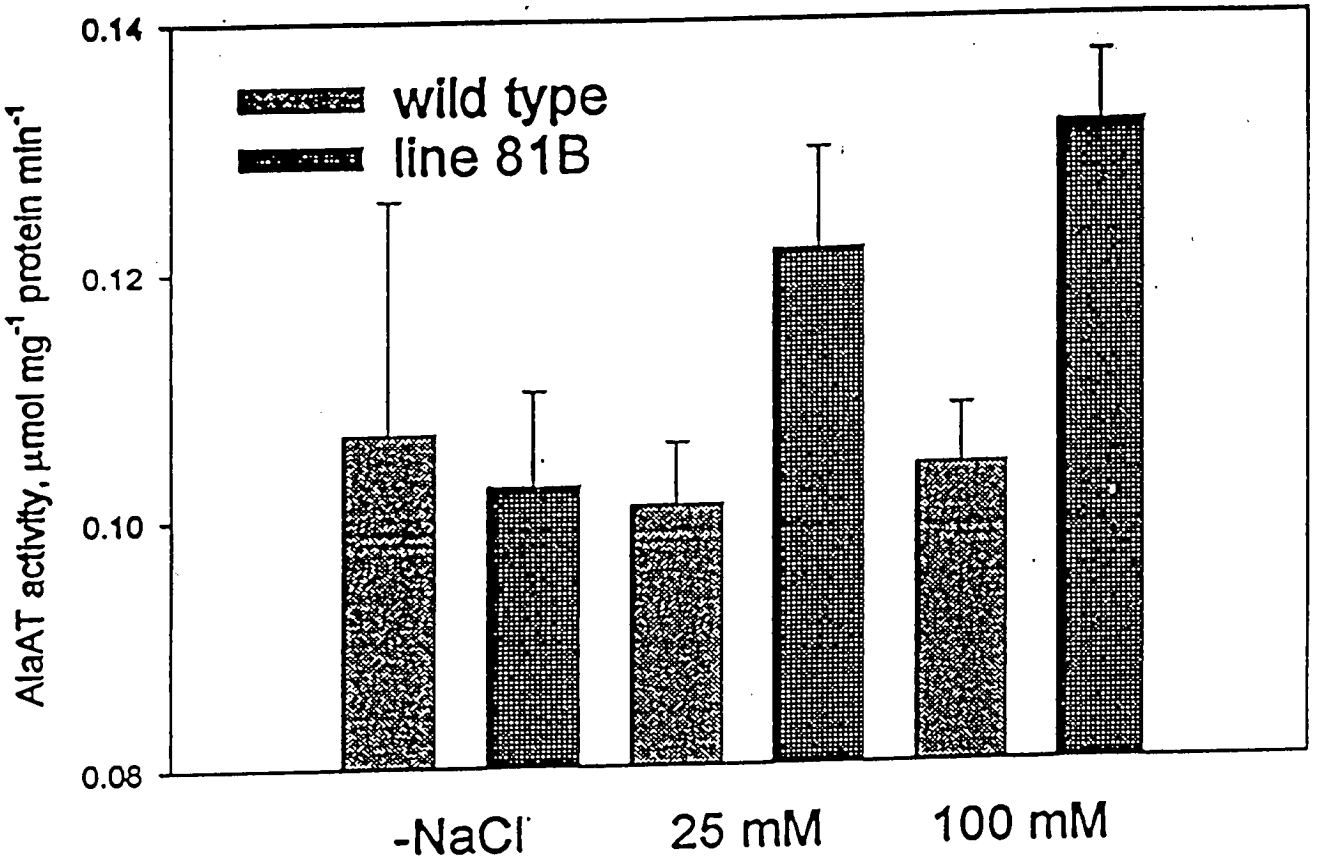


Figure 14

AlaAT activity in roots of wild type, cv. Westar, and transgenic btg26/AlaAT line 81B, plants grown hydroponically on 0.5 mM nitrate after 36 hours of salt treatment

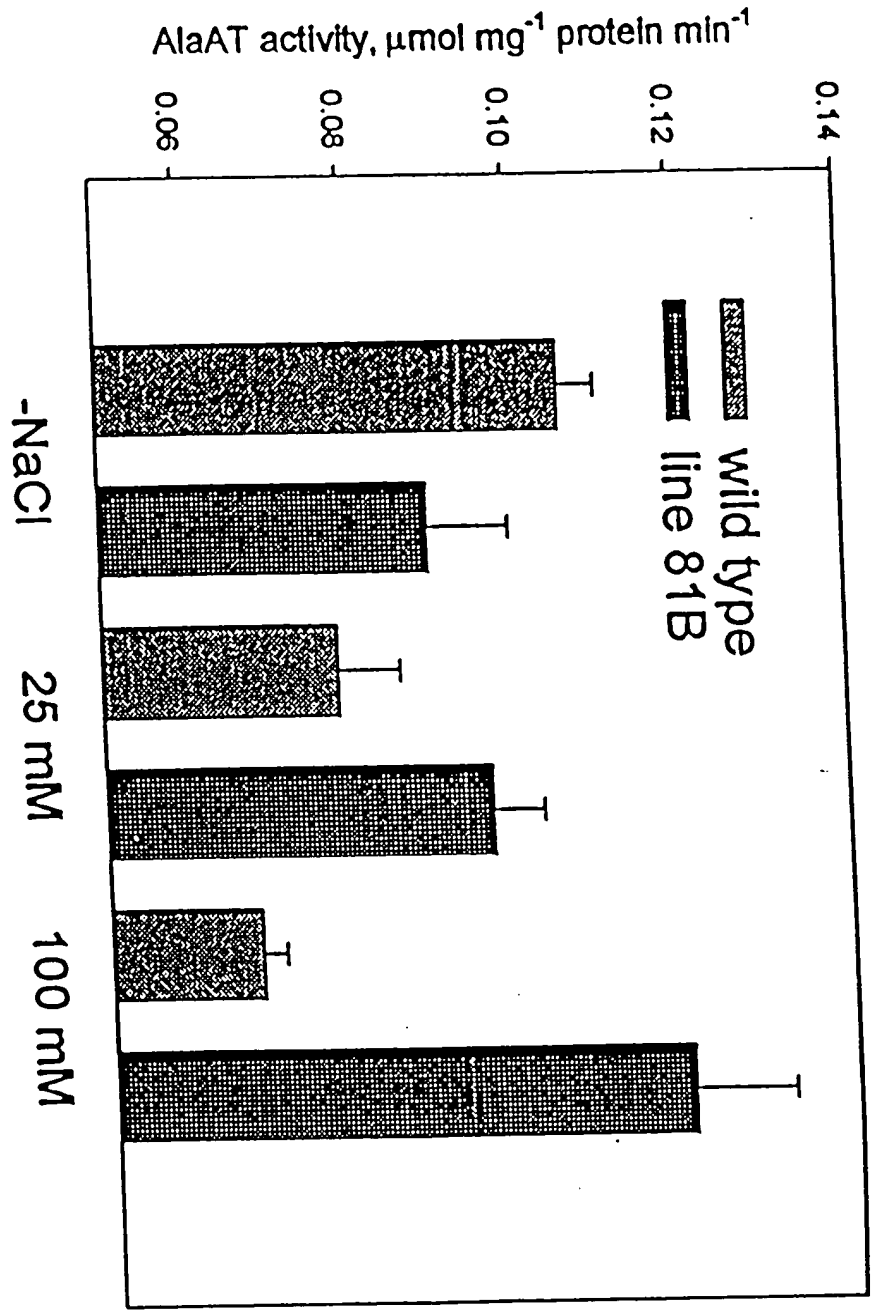


Figure 15

Effect of salinity on biomass accumulation of wild type, cv. Westar, and transgenic, btg26/AlaAT, line 81B, plants

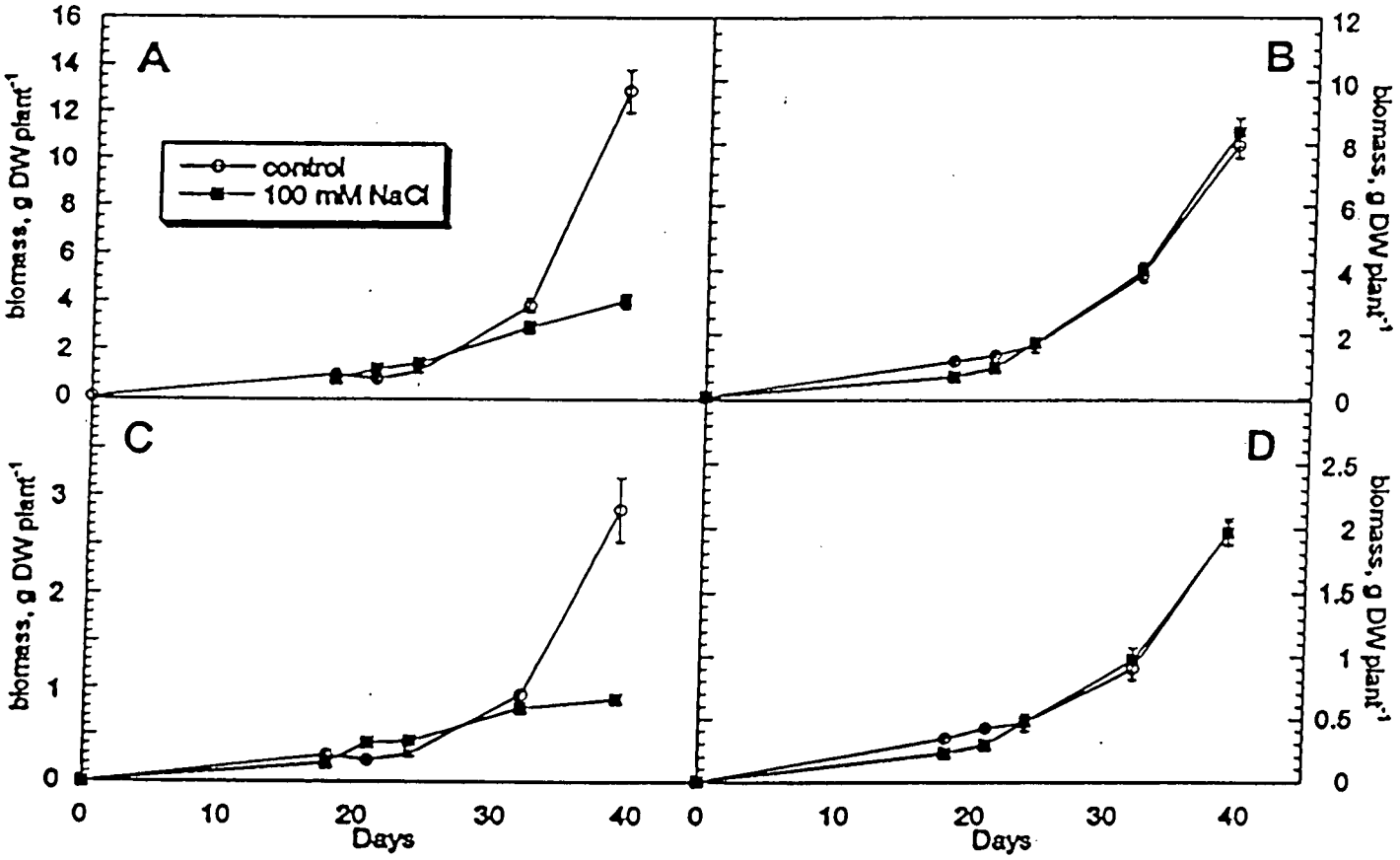


Figure 16

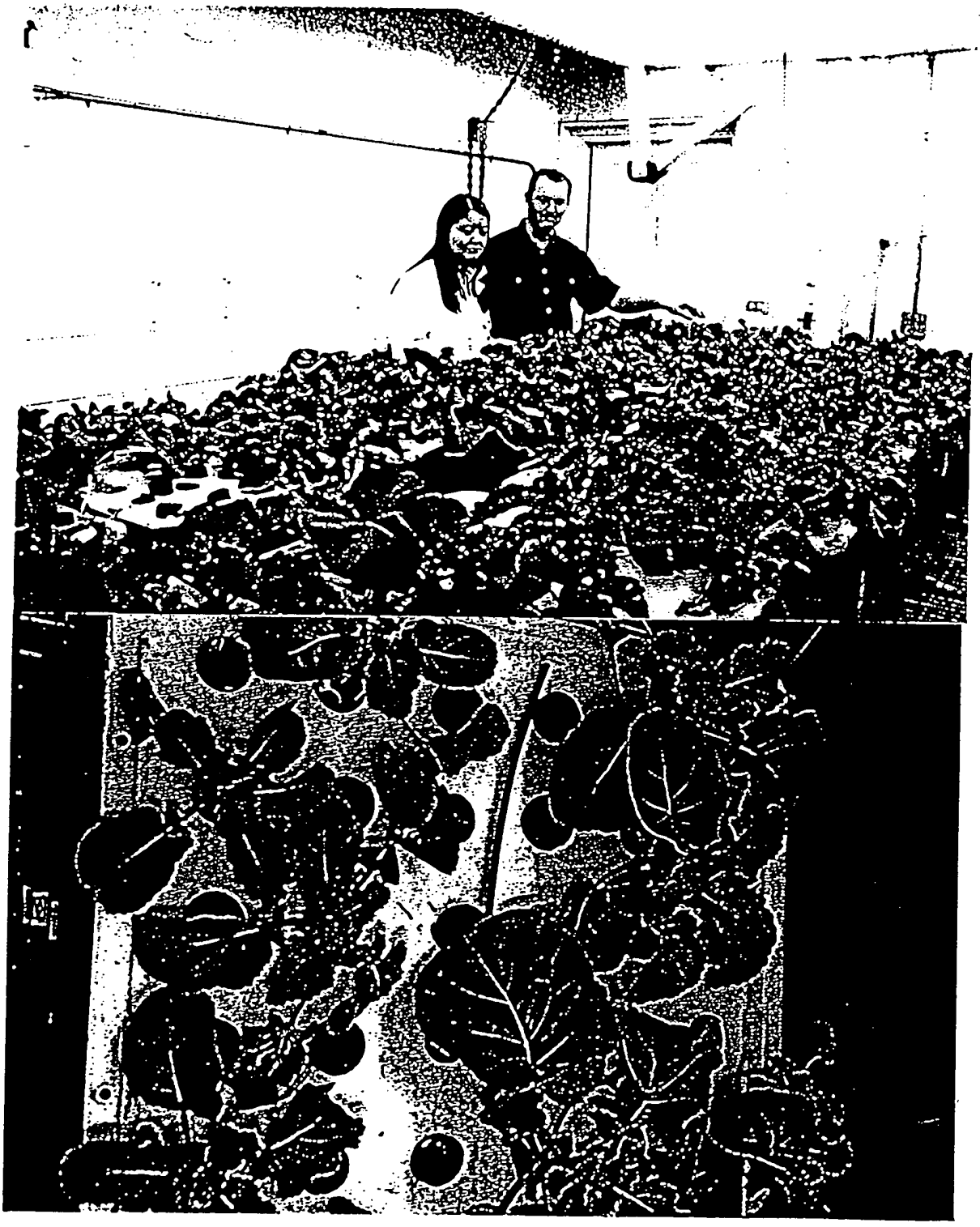


FIGURE 17

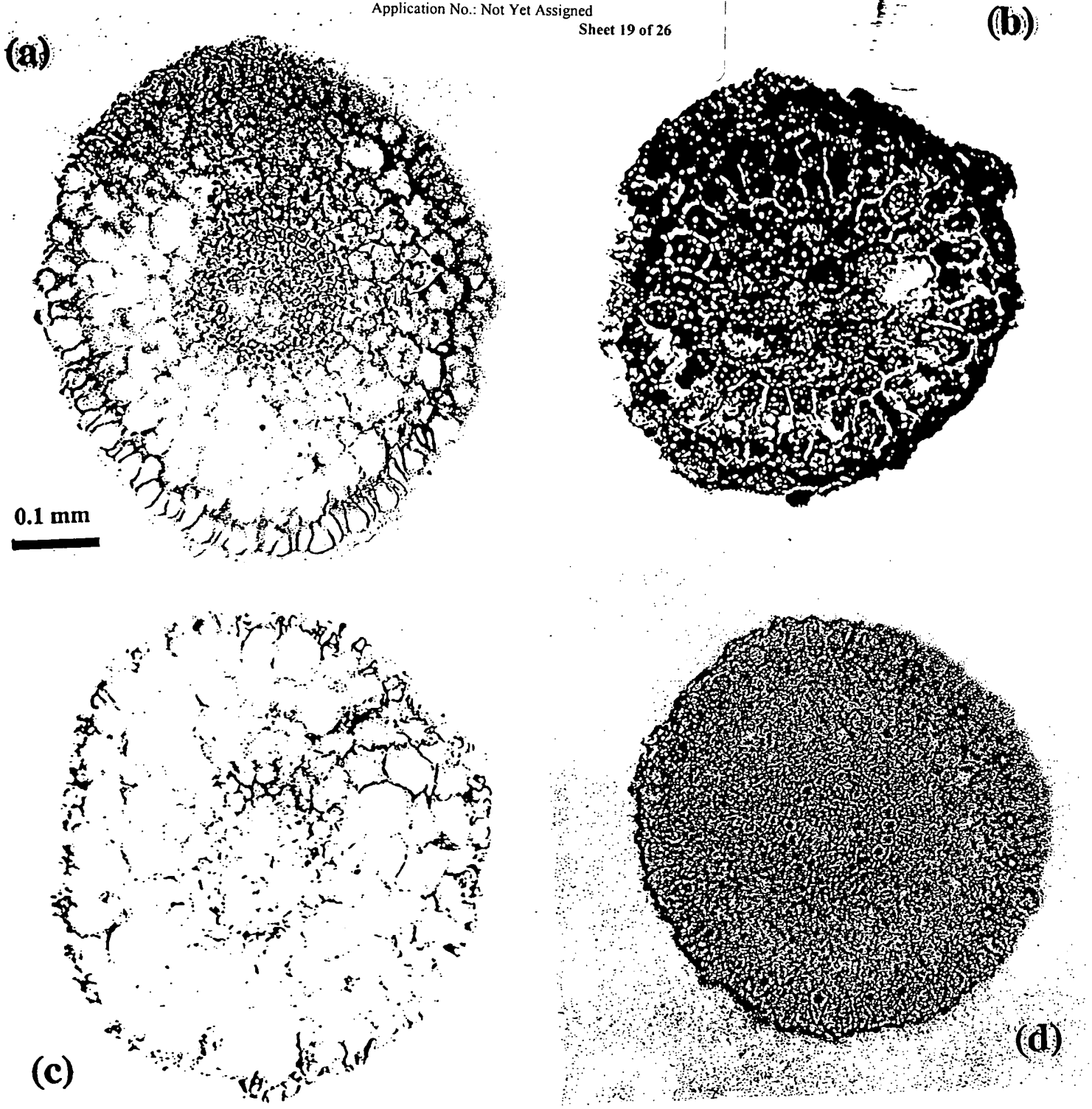


FIGURE 18

Figure 19

Average Dry Shoot Weight of Transgenic Canola Lines Containing btg26/AspAT Grown in High and Low Nitrogen Conditions

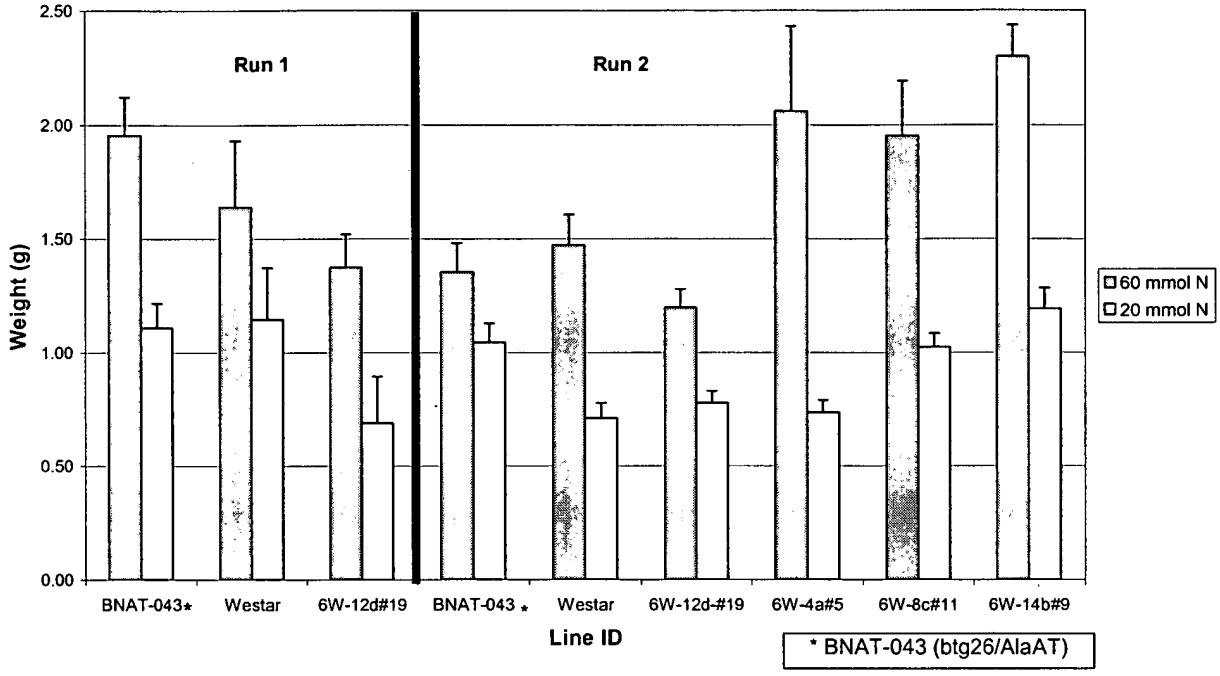


Figure 20

Average Dry Root Weight of Transgenic Canola Lines Containing btg26/AspAT Grown in High and Low Nitrogen Conditi ns

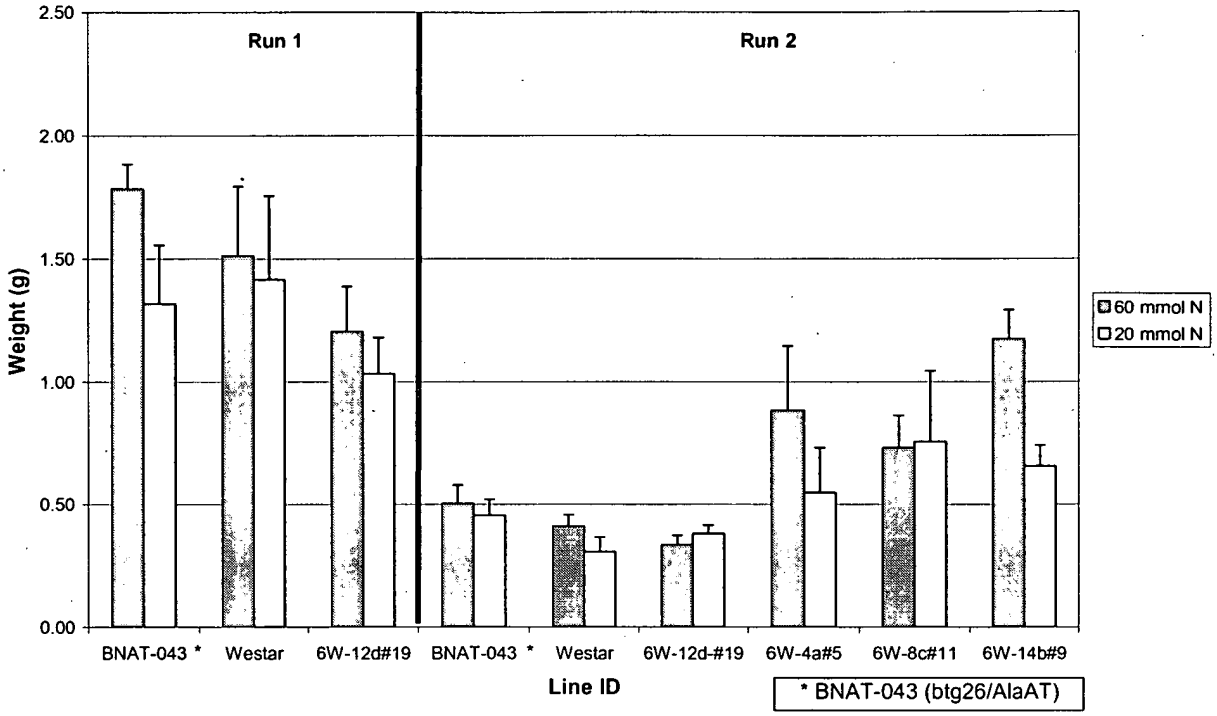


Figure 21A

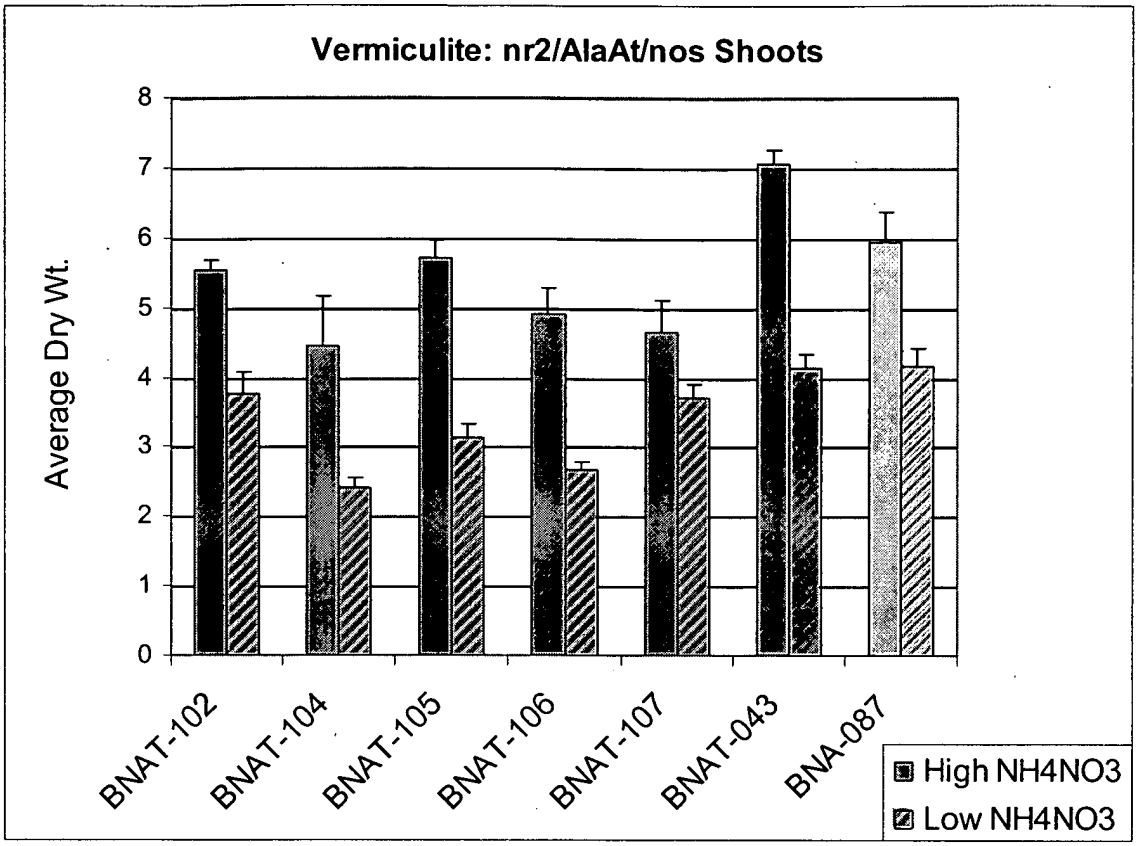

Vermiculite: nr2/AlaAt/nos Shoots
Average Dry Wt.
0
1
2
3
4
5
6
7
8
BNAT-102
BNAT-104
BNAT-105
BNAT-106
BNAT-107
BNAT-043
BNA-087
High NH4NO3
Low NH4NO3

Figure 21B

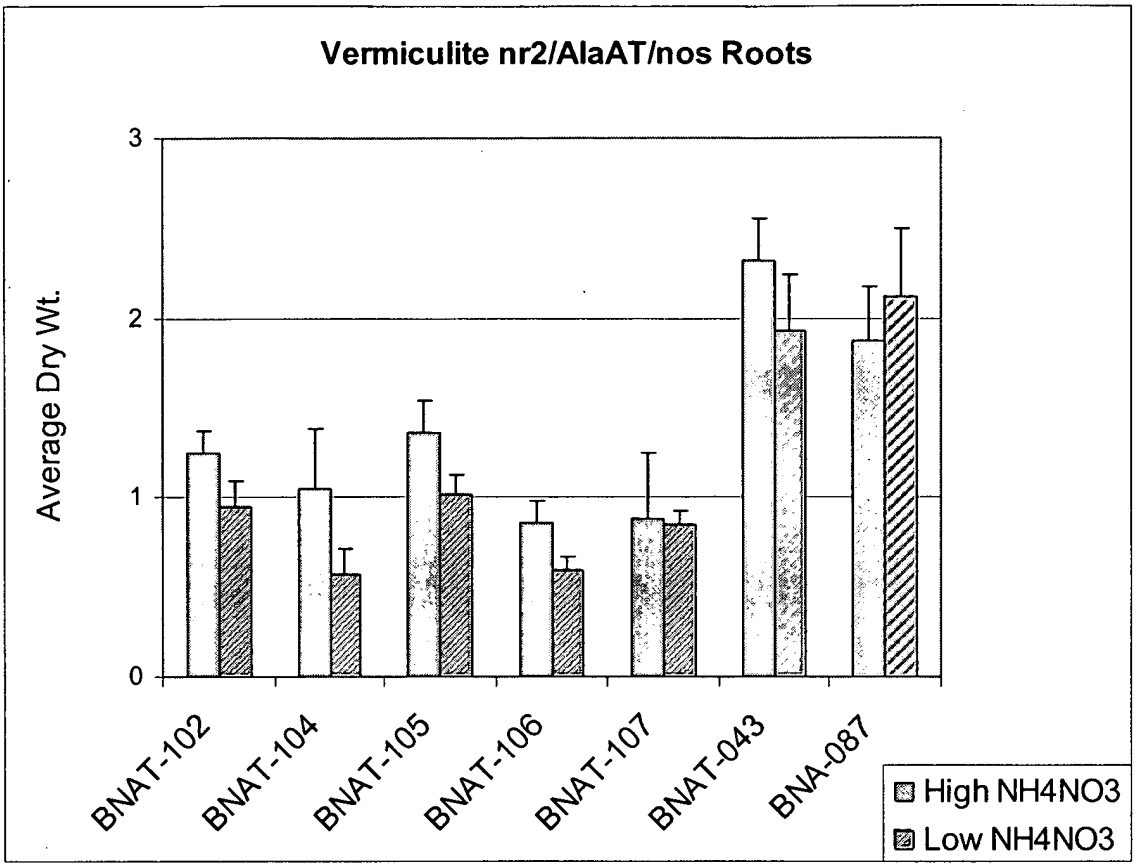

Vermiculite nr2/AlaAT/nos Roots
Average Dry Wt.
3
2
1
0
BNAT-102
BNAT-104
BNAT-105
BNAT-106
BNAT-107
BNAT-043
BNA-087
High NH4NO3
Low NH4NO3

Figure 22

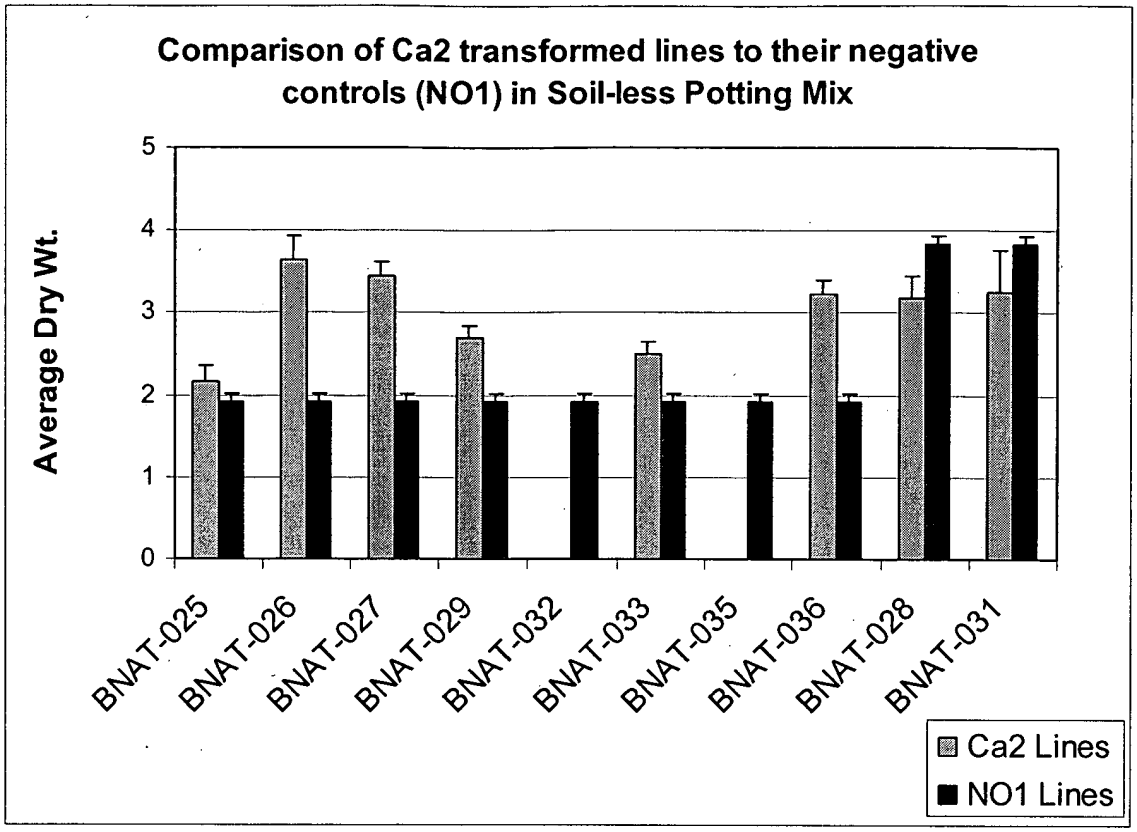

Comparison of Ca2 transformed lines to their negative controls (NO1) in Soil-less Potting Mix
Average Dry Wt.
5
4
3
2
1
0
BNAT-025
BNAT-026
BNAT-027
BNAT-029
BNAT-032
BNAT-033
BNAT-035
BNAT-036
BNAT-028
BNAT-031
Ca2 Lines
NO1 Lines

Figure 23

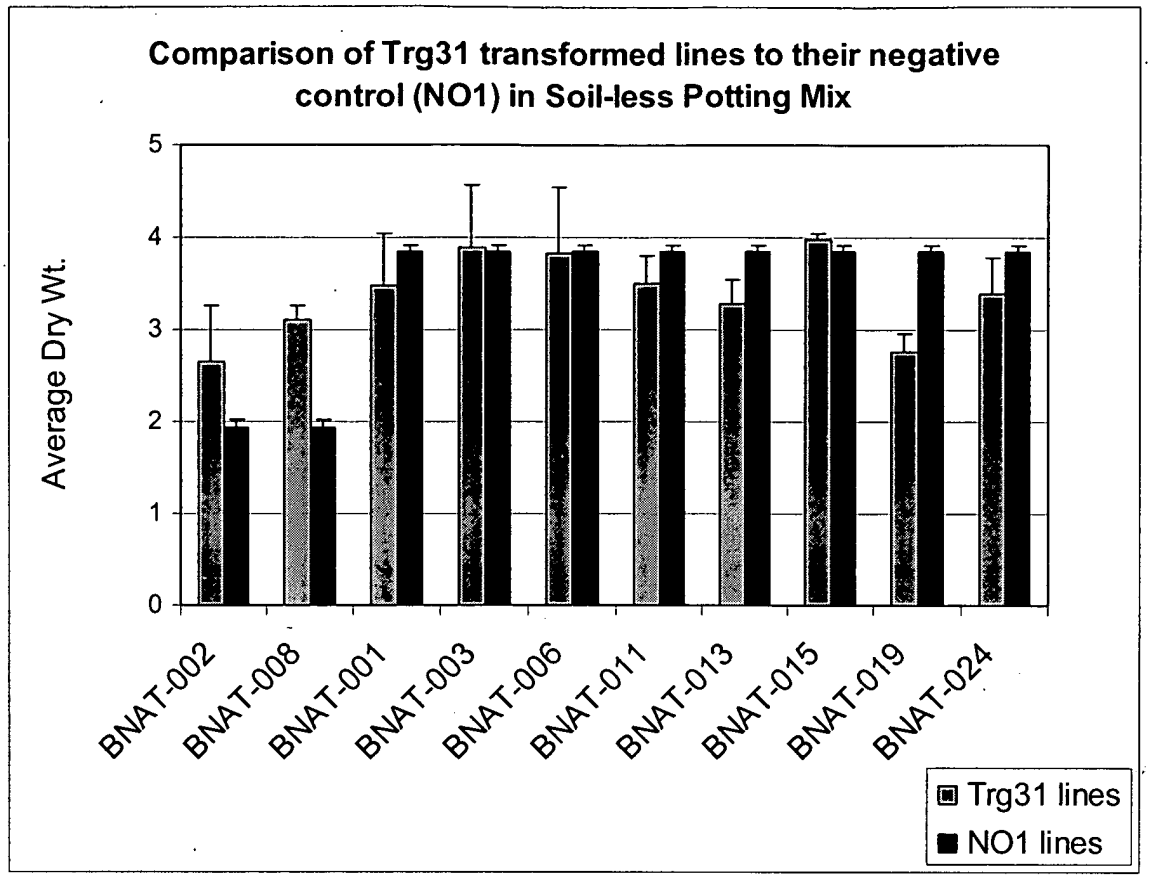
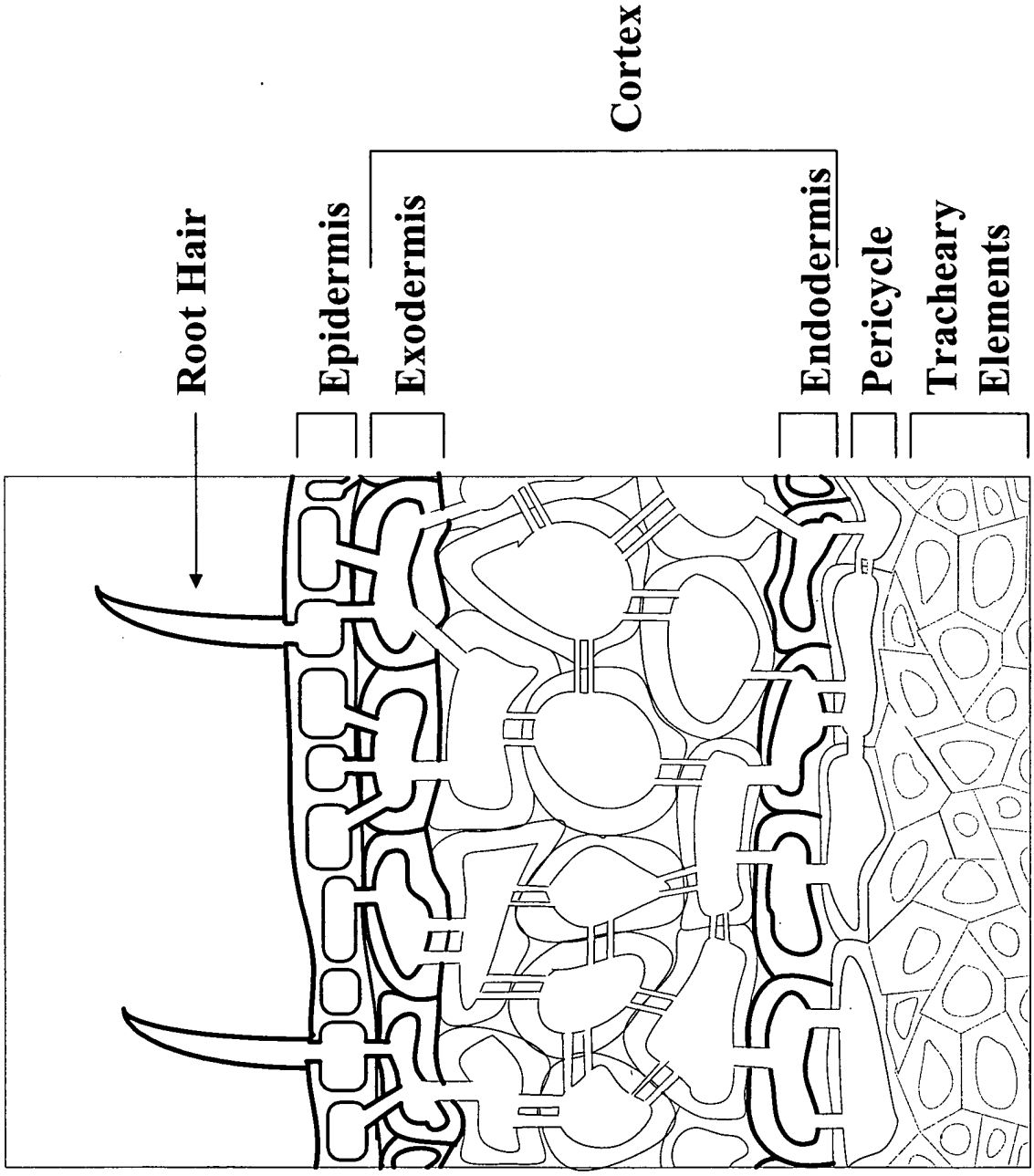

Comparison of Trg31 transformed lines to their negative control (NO1) in Soil-less Potting Mix
Average Dry Wt.
0
1
2
3
4
5
BNAT-002
BNAT-008
BNAT-001
BNAT-003
BNAT-006
BNAT-011
BNAT-013
BNAT-015
BNAT-019
BNAT-024
Trg31 lines
NO1 lines

Figure 24


Cortex
Root Hair
Epidermis
Exodermis
Endodermis
Pericycle
Tracheary Elements